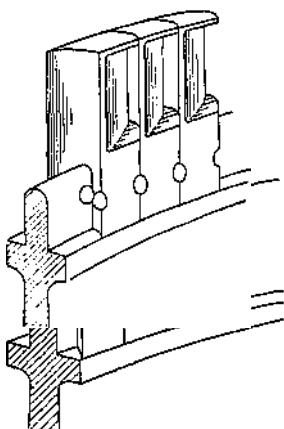


practice is commended as a means of detecting defects such as hair cracks or unequal internal stresses or faulty workmanship in the fitting of the blades. The shafts are stepped from either end towards a maximum diameter approximately in the centre, and the discs are forced on and keyed in position. Suitable nuts are fitted at either end to lock the discs.

Fig. 18 illustrates Messrs. Fraser & Chalmers blade design and the methods of fastening. The blades are in all cases milled out of square bars, together with the forks which hold them to the disc. Each blade is so shaped at the root as to form its own distance piece, and in the shorter blades the outside



Blading for single or double rows (short blades). For re-blading, any blade can be taken off by removing the rivets on each side, and new blade can be riveted in place.

Blading for single row long blades. For re-blading, section of cover strip is taken off and blade then removed by taking out the rivets on each side.

Fig. 18.—Fastening of Blades of Fraser & Chalmers Rateau Turbine

distance piece or shrouding is also formed in one with the blades. In the case of the longer blades the ends are formed into tangs over which a band shrouding is fitted, the ends of the tangs being riveted over to hold the shrouding in position.

The blade forks form a straddle across the outer periphery of the discs, and the method of securing them to the discs by means of rivets passing through the forks and the discs is clearly shown in the illustration. This method of fixing the blades has the advantage of allowing individual blades to be removed and replaced in a simple, manner.

Reverting to fig. 17 it will be noted that next to the journal is the worm driving the worm wheel attached to the main governor spindle, and on the other side of the worm the thrust block, which is of the Michell type. The emergency governor is fastened at this end of the turbine shaft, and consists of a rotating plunger whose centre of gravity is out of centre with the turbine shaft. The centrifugal force due to the out of balance of the bolt is checked by a spring until the predetermined tripping speed is reached. Beyond that point the plunger flies out and releases a trip lever and spring which